GALAPAGOS AT RISK

A Socioeconomic Analysis of the Situation in the Archipelago

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Galapagos at Risk

Executive summary – key points

1. During the last 15 years Galapagos has experienced drastic economic, social, cultural and ecological changes.
2. The principal cause of these changes has been growth driven by tourism which has grown economically at 14% per year. This growth is demonstrated by the increase in available beds from 1,928 in 1991 to 3,473 beds in 2006, and in the numbers of visitors to Galapagos from 40,000 in 1990 to over 140,000 in 2006.
3. Democratic instability on a national level and a complex institutional framework has weakened central government leadership in Galapagos.
4. This weakening, linked with a local leadership focused on local benefits, has enabled the growth of the tourism without a long-term strategy.
5. The markets and dominant operators of tourism are evolving toward massive replaceable markets with emphasis on multinational investors and operators.
6. At present, tourism represents a total value of $418M, of which an estimated $60M enters the local economy and so is the principal source of income for the islands.
7. Tourism, central government contributions, bilateral and multilateral support and individual donations are the largest sources of financing in the Galapagos economy.
8. Fishing now represents less than 4% of the total income in Galapagos. This activity was more important at the peak growth period of the sea cucumber fishery.
9. The financial flows from tourism promote local small enterprise development which in turn contributes to increasing immigration to the islands.
10. Demands for public services and jobs are part of a vicious cycle of growth; a better standard of living on the islands makes the location more attractive to immigrants.
11. Historical subsidies and incentives that Galapagos receives also contribute to uncontrolled growth.
12. The growth of tourism and the population stimulate the arrival of more flights and more cargo boats, decreasing the isolation of the archipelago and thereby increasing the arrival of invasive species – the greatest threat to the native biodiversity.

Galapagos at risk

The risk of losing the extraordinary biodiversity of Galapagos can be viewed from three principal perspectives: 1) this is the world's last oceanic archipelago that still retains 95% of its original biodiversity and thus represents a region of great importance for humanity; 2) the archipelago is unique and its biodiversity have substantially influenced human philosophy through Charles Darwin's work; 3) the biodiversity of Galapagos is the basis for the local economy and is an important contributor to the Ecuadorian economy.

The present direction of development in Galapagos may lead to the failure of tourism and its associated businesses. This failure will cause the loss of a cheap and critical resource for both Galapagos residents and for the nation of Ecuador. The introduction of invasive species, pollution and the over harvest of natural resources are symptoms of an unsustainable economic model. The ecological damage that will result from this model has irreversible consequences and will result in the loss of an irreplaceable global treasure.

As are all archipelagos, Galapagos is particularly fragile. Its biological diversity is highly susceptible to invasive species, over harvest of its natural resources, pollution, natural and anthropogenic disasters and climate change. To date, Galapagos's biological diversity has been kept relatively well conserved. The situation is arguably better than 100 years ago when scientists focused on specimen collection rather than restoration. However, the long term future of the biodiversity of the archipelago will depend on the decisions taken about sustainable development in the short term.

Sustainable development in Galapagos is complicated by the same factors that affect the development of islands all over the world. Fundamental factors include the fact that islands are poor in resources, few marketable products exist, and that transportation costs to external markets are high. Production costs in islands are high because of the absence of economies of scale, and because raw materials have to be brought from the continents. In addition, islands usually have few trained human resources because the resident population size is usually small and training is costly.

These limitations to sustainable development also affect the capacities of local authorities that must supply the resident population with public services like water, education and health. The provision of these services in islands also suffers from the lack of economies of scale, the lack of human resources and the high costs of raw materials. In short, life in islands is for the most part difficult and normally more expensive than life on continental land masses.

These socioeconomic and ecological characteristics of islands and the global importance of Galapagos conservation mean that the islands require a special model for development.

To date, development in Galapagos has been based on a “frontier mentality” with a focus on rapid free market-driven development with minimal consideration of equity and long term sustainable development. This development model is reflected in businesses that have periods of rapid growth and prosperity and then collapse, as has been seen in the historic examples of the exploitation of the fur seals and the Galapagos-based whaling industry, in contemporary examples like fisheries, and now in the development of tourism. In this context it is important to reflect not only on the rights of Galapagos residents but also on the responsibilities of living in a fragile and special place.

There has been a lot of discussion about the causes of the current situation in Galapagos. In general, debates are based on suppositions and perceptions instead of solid information. The following opinions are prevalent in discussions about Galapagos: 1) *foreign interests are taking possession of tourism;* 2) *tourism does not provide local benefits;* 3) *the Galapagos National Park Service and the Galapagos National Institute (INGALA) have failed as institutions;* 4) *the international community has spent considerable funds on a conservation focus with minimal impact;* 5) *instability in the national government in Quito generated the crisis;* 6) *the Government does not think about the people but only in the plants and animals;* and 7) *political leadership in Galapagos is questionable.*

The discussion has focused on interpretations and the specific perspectives of stakeholders, instead of technical analysis with a holistic perspective. In this document, we summarize several studies of Galapagos that include an analysis of biodiversity (Bensted Smith 2002), of conflict (MacDonald 1997; Heylings and Cruz 1998; Bonilla 2007), of tourism (Epler 1993; MacFarland 2001; Blanton 2006; Epler 2007), of the economy in general (Taylor, Dyer et al. 2003; Taylor, Hardner et al. 2006; Taylor, Stewart et al. 2006), and of migration (Kerr, Cárdenas et al. 2004).

Disagreements in Galapagos seem to result from the different perspectives of stakeholders; that is, conflicts result from different perspectives rather than from real differences. Many recognize that Galapagos is in crisis, not only a governance crisis, but also an institutional, educational, economic and ecological crisis. Many stakeholders consider that the direction of development in Galapagos is wrong; and furthermore that the exponential rate of change is very worrying. There is also general agreement that the driving force of change in Galapagos is the growth in tourism.

It is critical to recognize the urgent need to focus on the underlying causes of the problems in Galapagos and on implementing a solution through leadership that can bring together the different interests and construct true collaboration. It is critical to treat the causes; not doing so will simply result in more complex problems with no real hope of long-term solutions. Leadership and collaboration are crucial to implement the required change in the direction of development. The new direction must be based on a holistic analysis and on bringing together all of the different perspectives.

The President of Ecuador has indicated forcefully that Galapagos are at risk and that it is a national priority for conservation. The United Nations Education, Science and Culture Organization (UNESCO) and the World Conservation Union (IUCN) have also

expressed their concerns about the status of conservation in Galapagos and its future trajectory. The President's declaration and UNESCO's inclusion of Galapagos on its List of World Heritage in Danger offer a crucial opportunity to change the direction of the development of Galapagos. This is potentially the best and last opportunity to assure the future of the conservation of Galapagos, through building a sustainable society.

Galapagos is undergoing constant change

Galapagos is experiencing a period of accelerated change that began over 15 years ago (Figure 1). Tourism has grown economically at 14% per year during the last 15 years[1] (Epler, 2007). This extraordinary rate of growth has reached this level despite a relative constancy in the number of tourism boats that have increased from 67 to 80 in the last 15 years (Epler, 2007). Before 1998 the Galapagos National Park Service allowed smaller boats to increase their capacity to 16 passengers and this change partially explains how the total berth capacity grew from 1,048 to 1,805 in the last 15 years (Epler, 2007). Today, ships and boats are working on average more days per year (on average 60 days more per year); operators also are filling up to 95% of their capacity and work an average of 222 days a year (Epler, 2007). At the same time, the average number of days that a tourist remains in Galapagos has reduced, but the major reduction in average time spent in Galapagos occurred prior to 1991. These changes have allowed tourism visitation to grow at an accelerating rate. Perhaps the best measure of the impact of tourism is by measuring passenger-days in boats and ships, which has increased by 150% from 145,408 in 1991 to 363,226 in 2006 (Epler, 2007).

Tourism via hotels has grown at the same rate as tourism via boats. In the last 15 years the number of hotels has doubled from 33 to 65 and the number of beds in hotels has grown from 880 to 1,668 (Epler, 2007). In the same period the number of restaurants and bars has increased from 31 to 114 (Epler, 2007). The markets for land-based hotels are limited because they do not have access to the majority of visitor sites (marine or land-based), except through day trips based on the islands.

Hotels now have almost the same number of available beds as boats, but hotels receive only 10% of the revenue that boats receive (Epler, 2007). This occurs because the majority of the hotels yield service to a market segment with lower buying power, including budget travelers, and because tourist volumes through hotels are much lower than boats. Similarly, the growth of tourism via hotels is bound to the growth in the numbers of land-based day operations. The owners of hotels recognize the need to either own day tour operations or associate with operators running day tours.

The Galapagos National Park Service finds itself under pressure to release new tourist concessions. The driving force behind this pressure is the premise that these new concessions are necessary because they would increase benefit flows to local

[1] Tourism is growing at an accelerated rate, which appears to be limited only by the capacity of the private sector to access markets, through the existence of guide controls, trails, itineraries and a limit on the number of tourism concessions (described in MacFarland, 2001).

residents. Several groups are interested in these new concessions including the hotel and fishing sectors, locally based dive operators, outside investors and the existing tourism private sector seeking to increase economies of scale.

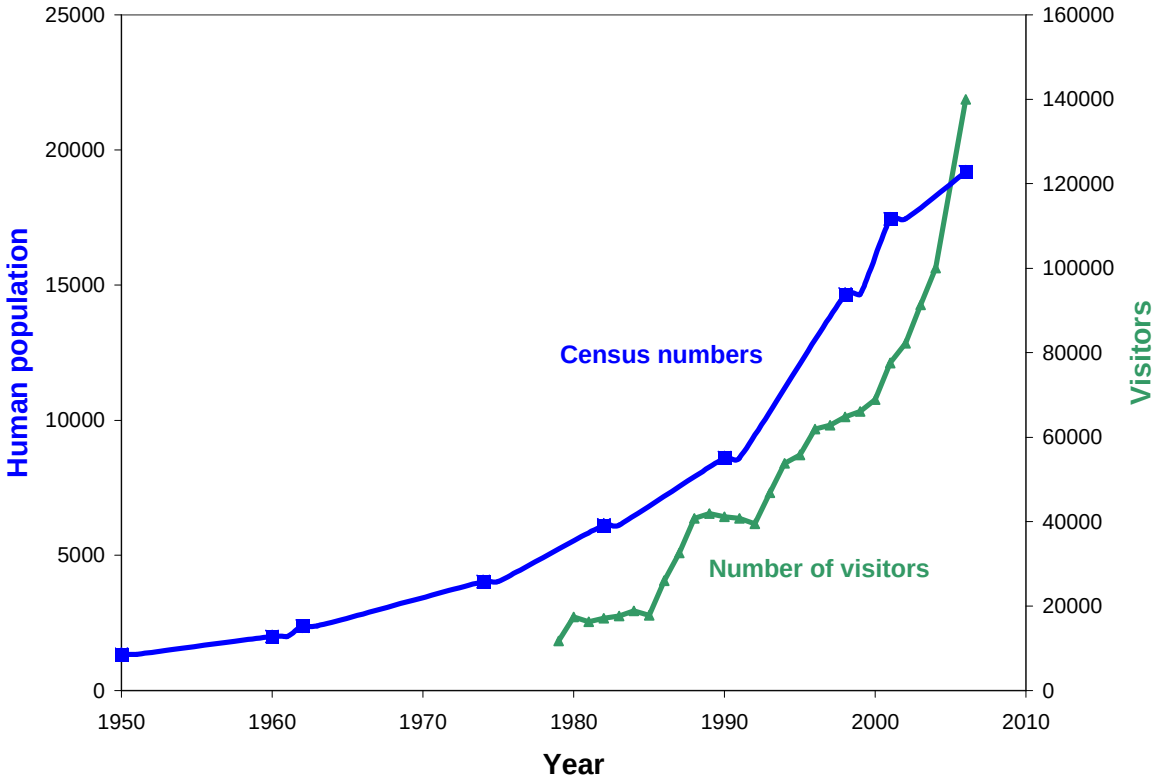

Figure 1: **Growth of the population in Galapagos and numbers of visitors to Galapagos**

To date, arguments about new concessions have been linked to studies of carrying capacity on individual visitor sites (number or people visiting particular tourist spots). However, carrying capacity is a concept used to examine the impacts of visitors at specific sites rather than a technical basis for determining total numbers of visitors. Indeed, a preferred methodology is now to examine acceptable limits to the degree of change to the visitor sites. Given that the most serious impacts of tourism in Galapagos are not at the site level but at a provincial level, we consider that the decision on concessions should be made based on global impacts. Increasing the number of concessions in Galapagos would increase short term financial flows to residents but is not likely to help long term sustainability. The fundamental economic concept here is the theory of trickle-down economics (supply-side economics); simply stated, grow the tourism and hope that this results in increased benefit flows to local people. In our opinion, growing tourism will lead to an enhanced cycle of growth that right now is recognized as unsustainable. It is highly likely that there would be an increase in the

transfer of concession rights from the original owners to those with economic power, exacerbating inequity between the “haves” and “have-nots” in Galapagos.

The vicious cycle of growth (Figure 2) is reflected in the following: continue growing the population through immigration, leading to increased demands and pressure for jobs and access to resources, which in turn leads to an increase in tourism and fishing access, and this then leads to a higher standard of living and the need for immigrant labor that increases the population.

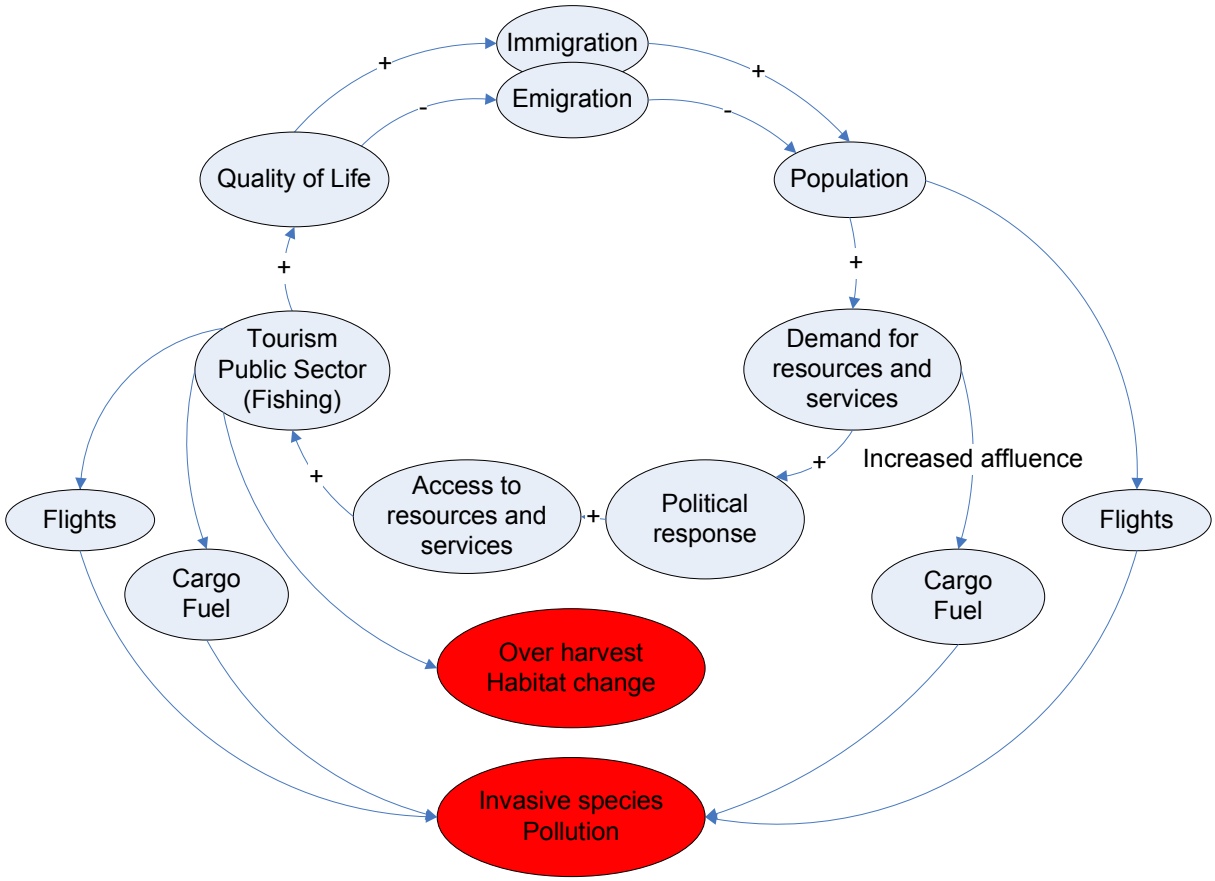

Figure 2: Cycle of growth in Galapagos

The consequences of this growth for the biodiversity of the archipelago are well documented (Bensted Smith 2001). Galapagos now has 748 species of introduced plants compared to 500 species of native plants. The number of registered introduced species in the archipelago in 2007 is 1,321, 10 times more than the 112 species registered in 1900 (Figure 3).

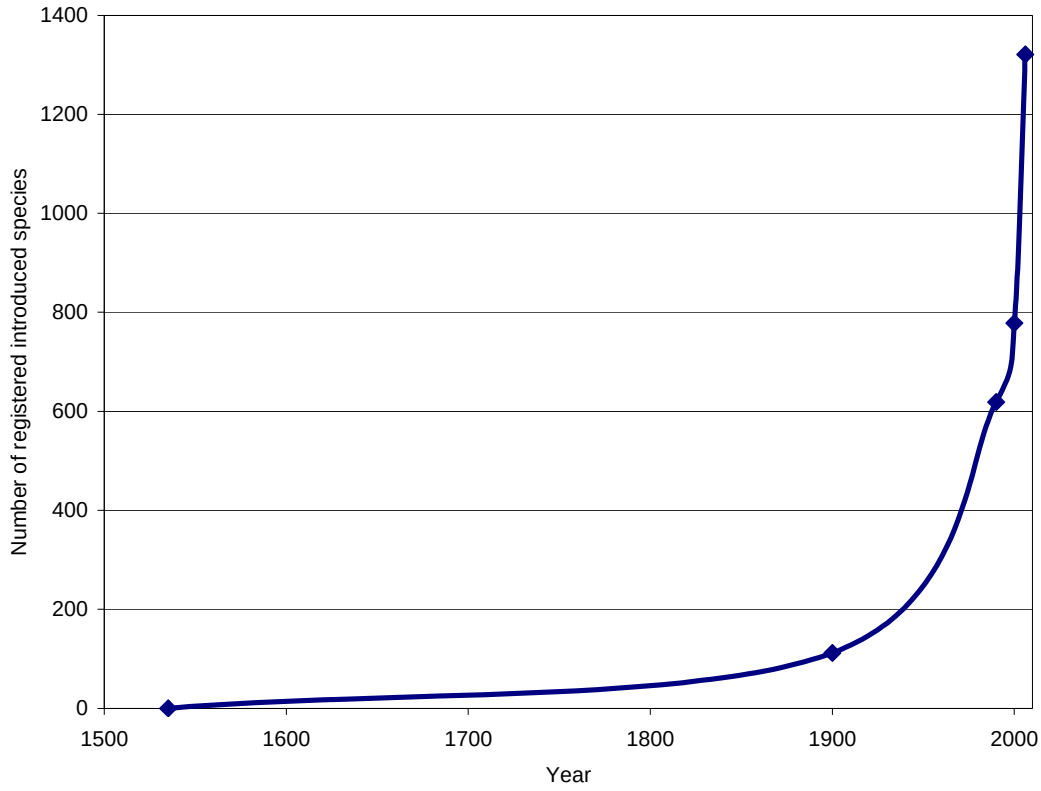

Figure 3: Totals of registered introduced species in Galapagos

Up to 60% of the 180 species of endemic plants in Galapagos are now considered threatened according to the IUCN Red List of Threatened Species. Today, there are 490 registered introduced insect species and 53 species of other invertebrates; 55 of these species are considered as high risk with the potential to cause severe impacts to native biodiversity. In addition we have detected 18 introduced vertebrate species, 13 of which are considered invasive. New vertebrate species arrive every year and potentially extremely aggressive invasive species such as mainland snake predators could soon establish themselves in Galapagos. Marine resources including lobster, sea cucumber and grouper, have diminished precipitously. The oil spill of the cargo ship Jessica in 2001 is also a consequence of the rapid economic growth in Galapagos.

In the past, linkages between tourism, economic growth, local business development, immigration and public service demands on the one hand, and invasive species, over harvests and pollution on the other hand, have not been made explicit. However there are several studies that emphasize these links and demonstrate that they are cyclical (Kerr, Cárdenas et. al. 2004; Taylor, Stewart et al., 2006; Cruz Martínez and Causton, 2007; Proaňo, 2006; Epler, 2007).

Changing tourism markets

The early development of tourism in Galapagos was characterized by nature loving tourists visiting Galapagos to learn about Darwin. For many this was one of the most important journeys of their lives. This type of tourist is the base of the comparative advantage of Galapagos; for these visitors the archipelago is unique and there is no possible competition with other locations. They are concerned about the excessive growth of tourism and are concerned about the damage that tourism causes in Galapagos. They are also very easily cared for by locally owned smaller tour operators or Galapagos specialist operators that can deliver them to visitor sites.

Over time, this pioneer market has been augmented by more mainstream “ecotourists” who also visit places like Machu Picchu, Ngorongoro, Komodo Island, Easter Island, and Australia’s Great Barrier Reef. However, this type of visitor is often a little more selective in terms of required comfort and is better served by multinational tour operators that can also offer trips to other locations around the world.

Today we are also seeing new investors in Galapagos trying to enter into very different, more activity-driven tourism markets. These new markets include sport fishing, beach camping, large cruises, biking, kayaking, and even parachuting. Such activities are available in many locations around the world and have, relatively speaking, little comparative advantage in Galapagos. The development of these new markets and associated infrastructure is opportunistic and reflects an absence of well structured planning. While in the short term these activities may serve as an attractor, in time these products will have to compete with similar ones in other locations, leading to a cycle of price-cutting and increased expenditure on marketing and infrastructure. The long term impacts of opening these markets in Galapagos will be to reduce the average value per visitor and push the system towards continued excessive growth.

This change in tourist markets is perhaps the greatest worry for the future of tourism in Galapagos (Blanton, 2006). Analyses of market cycles in other tourism markets as described by Plog (2001) identifies patterns of change than are self-reinforcing and result in visitor reductions and lower revenues over the long term. Market cycling in tourism can eventually lead to complete collapse, epitomizing the history of Galapagos with the boom and bust of yet another lucrative product; with this collapse will come inevitable ecological degradation (Figure 4).

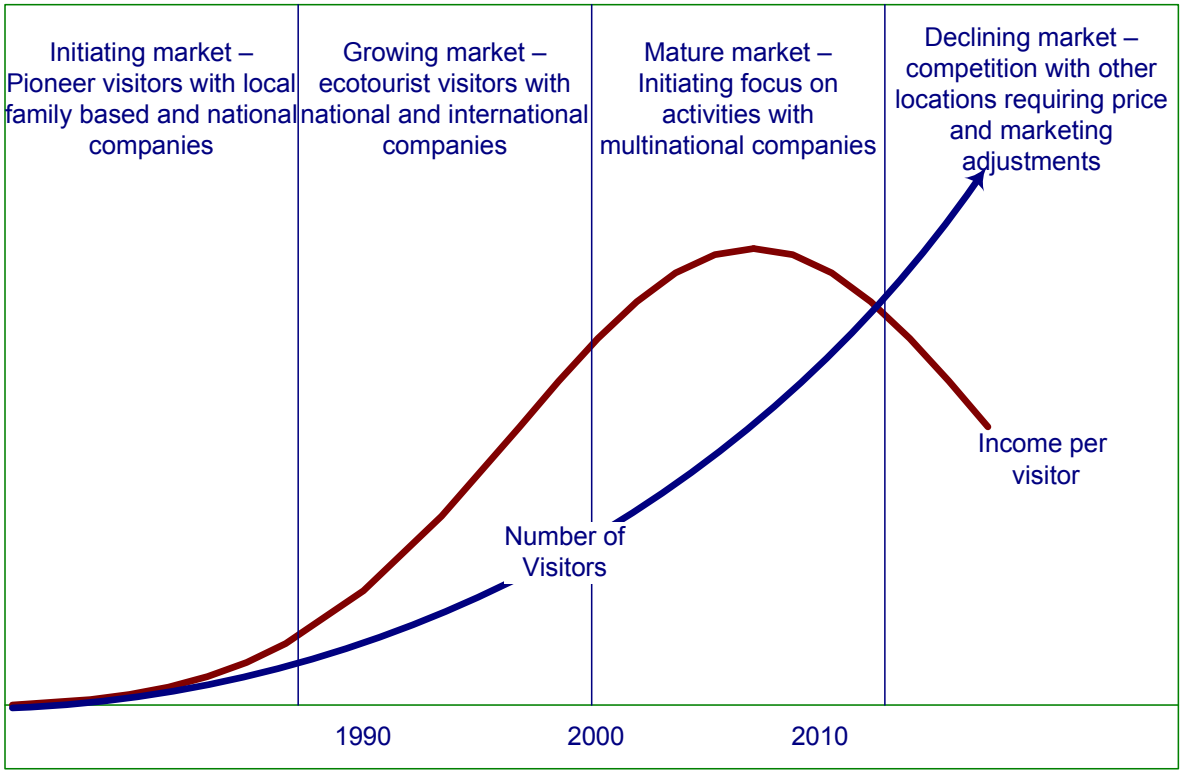

Figure 4: Predictive Model of changes in markets and operators in Galapagos

Changing tour operators

Changes in tourism markets have also been associated with changes in the kinds of tour operators. Local operators represent about 40% of the boat owners in Galapagos, but they are losing ground against international operators who can more readily access investment support and are better equipped to access the productive networks of tourism (Taylor, Stewart *et al.*, 2006). Operational costs of tourism in Galapagos are higher than on the mainland which means that larger companies that focus on cost reduction and efficiency can provide a better product to visitors. In this environment it is difficult for smaller companies to compete with larger operators. This competition is reflected in the greater volume of visitors on larger boats (45-100 passengers) and that the eight largest vessels in Galapagos earned half of the total gross income of all tour boats combined (Epler, 2007).

Larger operators have more available investment capital and existing market linkages and are already connected to the airline supply routes. Multinational operators are attracted to the Galapagos market because volumes have grown and the market has shifted toward those searching for vacation opportunities in several key ecotourism locations in the world. The profits of multinational operators are likely to be greater than smaller operators because they have market access, economies of scale, greater

efficiency, provide more comfort, and have well developed alliances with international and national airlines.

The tourism markets have begun to shift away from the principal comparative advantage of nature-oriented and Darwin-linked tourism. Adventure tourism, larger cruise ships (up to 500 passengers), hotels, and activity-based tourism including sport fishing are now being offered and will have to compete with similar offers in other equally attractive locations in the world. If new visitor sites are opened they are unlikely to meet the same high level of biological value of existing visitor sites and will therefore reduce the overall quality of a visit to Galapagos. Some visitor sites are already apparently overloaded with visitors, the quality of guides has decreased, and a shift has begun toward larger volumes of visitors rather than fewer high paying visitors. As visitor experiences begin to decline, markets will decay and operators will be forced to reduce prices and increase marketing and infrastructure. These changes will drive tourism towards ultimate collapse as has happened in other locations (Plog, 2001).

Local benefits

There has been a great deal of discussion in Galapagos about the flow – or the absence of flow – of benefits from tourism to local residents. This debate is the basis for the creation of a new model for tourism that unfortunately has not been well developed and is partially driven by differences among the islands (primarily Santa Cruz, San Cristobal and Isabela) in the degree to which tourism is an economic driver.

Tourism has grown very rapidly. Total gross income for boats in Galapagos has grown from $19.6M a year in 1991 to $145.5M in 2006 (of which US$25M goes to international travel retailers). Gross income in hotels has grown from US$1.1M a year to US$10.7M per year in the same time period (Epler 2007). This economic growth has been more notable on Santa Cruz where the principal flows to the community occur through ownership, employment and local purchasing of crafts, restaurants and bars (Proaño 2006). It is difficult to obtain precise economic data, but it is likely that the principal route of benefit flow to the local residents is through employment. Taylor, Stewart and Hardner (2006) indicate that tourism is the main pillar of the Galapagos economy, generating substantial local benefit. Today, the financial flows from tourism are the basis of the economy in Santa Cruz and tourism is the basis of the small to medium sized enterprises including construction, commerce, service provision, markets and laundries that proliferate in Puerto Ayora. Increasing the number of residents employed within the existing tourism framework would increase the benefit flow from tourism to local residents. If one was to compare Galapagos with the Caribbean Islands, it could be argued that Galapagos already exhibits “tourism with local participation”. However, these benefits can also be improved with more effective urban planning and training and the benefits are degraded by the arrival of new immigrants (Taylor, Stewart and Hardner 2006).

Kerr, Cárdenas et al. (2004) recommend that the linkages between commercial development, human resources and immigration require much deeper analysis and

consideration. Such analyses, including understanding the relationships between wages, inflation, employment and immigration, are required to better plan the sustainable development of towns like Puerto Ayora (Santa Cruz), Puerto Villamil (Isabela) and Puerto Baquerizo Moreno (San Cristobal). It would appear that the major immigration threat occurs because town-based small businesses employ non-residents because they are cheaper or because family businesses can employ relatives from outside of Galapagos. A reflection of the poor planning is that sectors such as service provision, construction, agriculture and even fishing are requesting new outside workers because they are unable to find enough local residents. Bars, restaurants and other service providers also seem to use immigrants instead of local residents.

Socioeconomic analyses indicate that immigrants tend to cost less than residents and furthermore that the income expectations of residents are often too high for smaller businesses (Henderson, Zurita *et al.*, 2005). These socioeconomic and cultural characteristics imply that economic growth almost always results in immigration. INGALA and the Municipalities must take the responsibility for designing sustainable commercial options for Galapagos residents based on the realities of the locally available human resources. Until then, economic growth will directly affect immigration, often independently of regulatory controls.

Financing in Galapagos

Several analysts (summarized in Taylor, 2006) suggest that the contribution of tourism to the local community in Galapagos is between 7 and 10% of the full value of tourism. This thesis is based on analysis of purchases in the community (hotels, restaurants and craft stores). Taylor et al. (2006) argue that the impact is greater if cash flows through households and analyzed to include employment benefits. Taylor et al. (2006) use a model of social accounting that enables calculation of the direct and indirect effects of tourism in the local economy; they calculate an annual contribution of tourism to the local community of US$62.9M.

Epler (2007) estimates the total value of tourism to Galapagos as US$418.8M, which is distributed in the following way: US$120.5M to tourism boats and ships in Galapagos; US$108M to international airlines; US$105.8M in expenses in continental Ecuador; US$37.7M to airlines flying to Galapagos from continental Ecuador; US$24.6M to retail agencies outside Ecuador; and US$22.8M to the hotels, restaurants and services in Galapagos (see Figure 5). Using the calculations of Taylor et al. (2006) and Epler (2007) gives an estimate of 15.5% of the full value of tourism as reaching the local residents. However, these data need refinement given the difficulty of obtaining precise financial information from all private sector tour operators in Galapagos.

The annual cost of maintaining the national, local and autonomous government institutions in Galapagos has been estimated in 2006 at $36.5 million (Díaz Guevara, 2006). This total does not reflect the budgets of the National Police or military installations on the islands. The economically most important institutions are the Galapagos National Park Service with an estimated 31% of this budget, the Provincial

Education Directorate with about 15%, and the Municipality of Santa Cruz with 14%. Approximately 60% of this budget comes from central government and about 40% is generated from Galapagos tourism (Díaz Guevara, 2006).

The non-governmental organizations (NGOs) working in Galapagos (Charles Darwin Foundation, WWF, Conservation International, WildAid and Fundación Galapagos) had a total estimated budget of $5.8M during 2006 (Epler, 2006).

Between 1998 and 2005 it was estimated that bilateral and multilateral institutions from the international community provided US$54.4M of support; that is an average of $6.8M per year. An estimated annual average of US$5.5M was spent through public administration and an additional US$1.3M annually through the NGOs working in Galapagos. In 2006 and 2007, with the completion of several major projects such as the U.S. Agency for International Development support to the Galapagos Marine Reserve and the completion of the United Nations Development Programme-Global Environmental Facility Invasive Species Project, there is likely to be a decline in bilateral and multilateral expenditures in Galapagos.

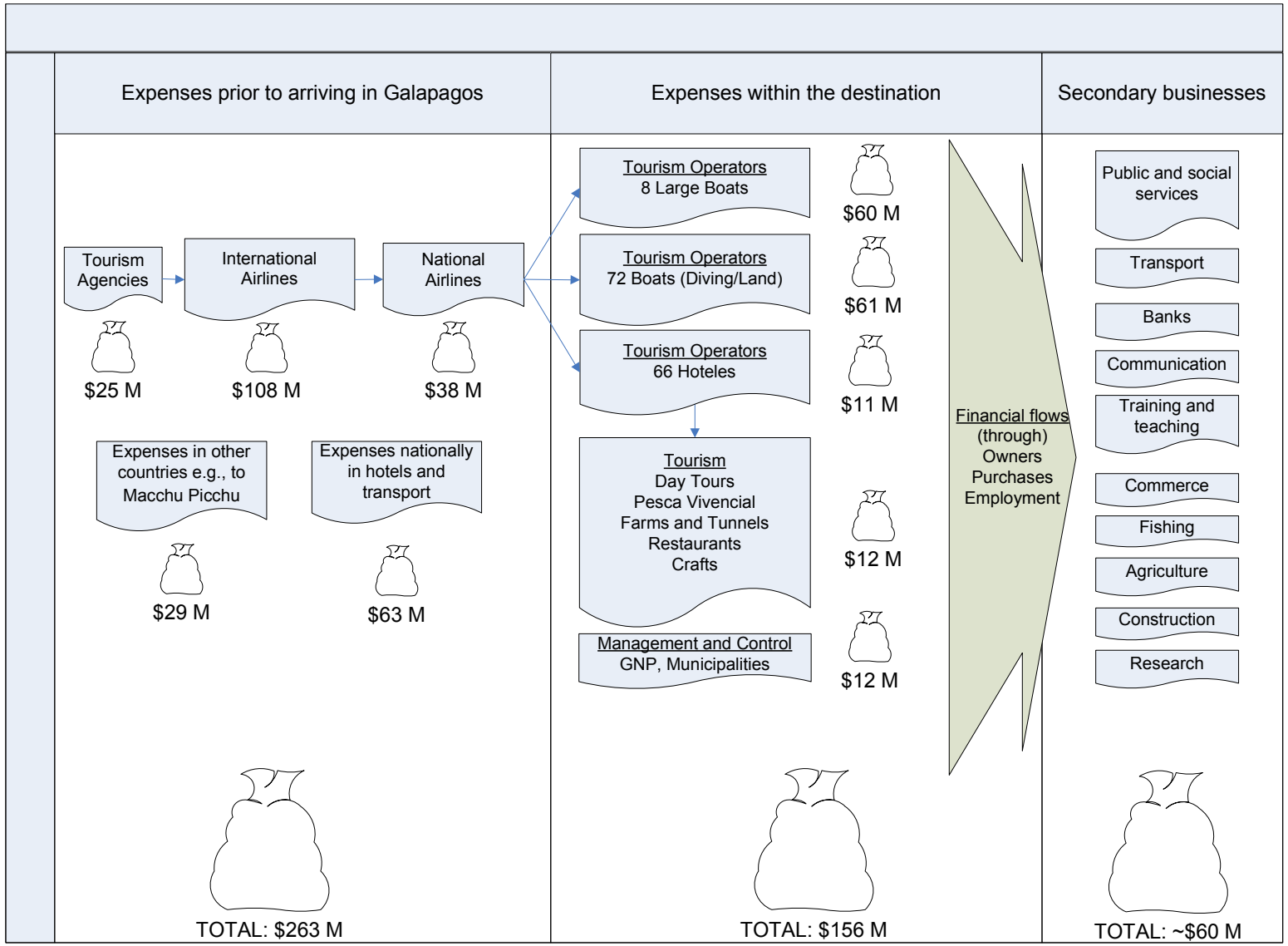

Figure 5: Distribution of Galapagos-related tourism expenditures (From Epler 2007, Taylor et al. 2006)

Unfortunately, information on financial flows is difficult to obtain. As a result it has been impossible to estimate the leakage of money from Galapagos and also difficult to estimate the gross island product per capita. Using the best available data, we estimate that tourism brings approximately $63M annually to the Galapagos economy, the Government of Ecuador invests $16.4M directly; bilateral and multilateral[2] contributions are $6.8M; non government organizations bring about $4.5M; and fishing represents no more than $3M of the economy (see Figure 6)[3].

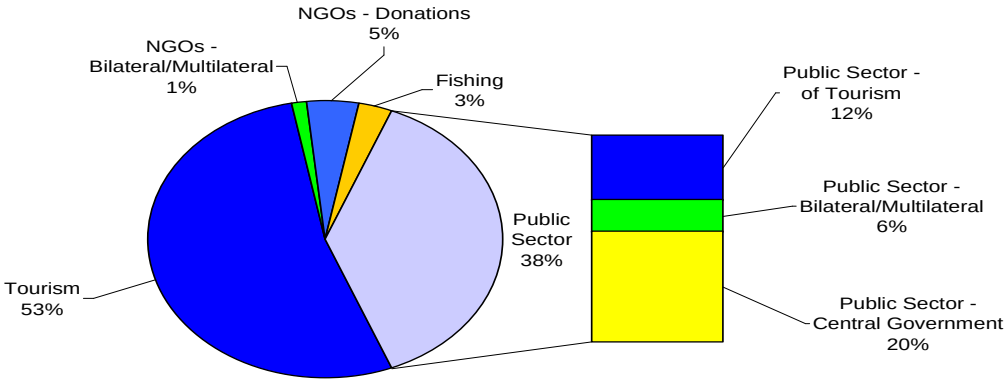

Figure 6: Estimation of financial flows to Galapagos (from Taylor 2006 and Epler 2007)

What is abundantly clear is that tourism is the economic engine of the Galapagos economy. The public sector is also important. Non-government actors and fishing take up third and fourth places, respectively.

[2] In 2007, Araucaria is supporting the Galapagos National Park Service (GNPS); the Italian Government is supporting PROINGALA within INGALA; USAID to the Municipalities and the GNPS; JICA is supporting the GNPS; UNDP-GEF is supporting INGALA, GNPS, SICGAL and CDF; KFW and the UNDP are supporting the Ministry of Energy and Mines in renewable energy projects.

[3] It is important to recognize that a deeper analysis is required of financing in Galapagos, in a need to understand the economy; the data presented here are drawn from budgets rather than actual expenditures.

Fishing and differences among the Islands

During 2006, we estimate that the gross income of Galapagos fisheries was less than $3 million (Hearn and Murillo, 2007). The history of the fisheries in Galapagos is a history of boom and bust that has provoked serious population declines in sea cucumber, grouper, lobster and possibly of other species (Hearn, Murillo et al. 2007). The principal causes of these failures have been an inability to control fishing and subsequent overcapitalization. Murillo, Reyes et al. (2007) consider that most of the fishing effort in the 2006 lobster fishery was focused on 250 fishers out of a total of over 1,000 registered Galapagos fishers.

In the past fishing has been based on sea cucumbers, which was arguably an important source of income for local people, particularly so for the islands of Isabela and San Cristobal. In the last three years fishing has abruptly dropped in importance from annual gross income values of up to US$8M to now less than US$3M. The impact of this change has been important and conflict-ridden, particularly for those islands where tourism has not grown as rapidly. The perception of tourism benefits flowing to Santa Cruz exacerbates the problem and any solution to the issues in Galapagos must take into consideration the socioeconomic and cultural differences among the islands.

The characteristics of islands in general, including distance to market, absence of economies of scale and the presence of few exploitable high value products means that it is highly unlikely that there are “new fisheries” that can be exploited in Galapagos. The most important products at the moment, sea cucumber, grouper, and lobster, must be more effectively managed with a reduced number of fishers. This is a management and control problem but the future of sustainable fisheries in Galapagos is questionable.

New local operators in tourism

There is a great deal of interest and substantial expectations of local residents that new concessions will be provided over the coming years. It is critical to consider this option in the context of sustainable development. Without available credit, training, and market analyses local residents will be unable to take advantage of the ownership of tourism. The end result will be that any new concessions will fall into the hands of either the existing tourism private sector or new investors searching to generate revenues from Galapagos. There has been substantial interest in a new model of tourism – “tourism with local participation” – but this concept has not been well developed and as described in Cordero, González et al. (2004), is unlikely to be successful in either increasing equity or conserving Galapagos.

Local ownership of establishments and tourism businesses is not pragmatic for two major reasons: 1) without investment backing, training and experience a novice operator will be unable to provide the required services (comfort, security and value) to effectively compete in the tourism market place, and 2) there are now 66 hotels and over 80 boats operating in Galapagos and sites are already considered overloaded; even doubling the number of owners (presently about 100) will simply expand the total

supply to meet demand without having a substantial impact on equity. Increasing the flow of tourists to Galapagos in this fashion will increase immigration, increase inequity and exacerbate the serious ecological, social, and cultural problems. It is clearly impossible to create 20,000 concessions but there are many possible ways to distribute the benefits of tourism through innovative concession management.

The pressures to increase local access to concessions is pushing Galapagos toward an additional burst of rapid growth that will be linked to immigration and a continued cycle of growth that will result in ecological disaster as new invasive species arrive to Galapagos. Additionally, as any economy grows, inequality will also grow. Galapagos, with the present direction of development, is unlikely to be different.

Impacts of tourism

The greatest impact of tourism in Galapagos is not on the visitor sites but is on the ecological, social, economic and cultural aspects of regional life. Visitor sites are relatively well managed using standard protected area management techniques including limited trails, guides to accompany visitors, fixed itineraries and a limited number of concessions (MacFarland 2001). The Galapagos National Park Service monitors visitor sites and can close sites or change itineraries in response to growing pressures and in this way the visible direct impacts of tourism have been well managed.

However, the way in which growth in tourism has been transferred to the towns has not been well managed. Tourism has provided benefits to Galapagos residents and the wealth generated is the basis for the local economy of secondary businesses. Unfortunately many of these businesses have not been regulated and so, while tourism as a whole has grown, this growth has lead to immigration and an explosion of new business interests in towns. At the same time demands for public services such as water, health, education and sanitation have grown, placing local municipal governments under substantial pressures. Providing the local population with these public services is costly and needs to be covered by local tax payments. Unfortunately many immigrants are not registered and therefore place demands on public services without contributing financially to the costs of these services.

When both tourism and population grows the demands for services and job opportunities also grow. As the number of flights to Galapagos and the numbers of ports of entry and exit grow, the numbers of cargo boats arriving increases. Commercial flights to Galapagos increased by 193% from 2001 to 2006 (Cruz Martínez and Causton, 2007). New access routes break down natural barriers to the arrival of new species and potentially bring more and more invasive species – the greatest threat to the archipelago. Coincidentally and in the same time period, the numbers of inspectors working for the quarantine service (SICGAL) of the Ecuadorian Agricultural Sanitation Service (SESA) has been reduced by 20% (Cruz Martínez and Causton, 2007). At the same time, as tourism and the local population grow more fuel is brought to the islands increasing the risk of oil spills such as that of cargo ship Jessica in 2001.

Leadership and governance

Over the last few years, a national democratic crisis has generated substantial instability in the public institutions leading Galapagos. In the absence of effective leadership nationally and regionally, the local, national, and international private sectors have taken advantage of increasing markets. Tourism has developed in a vacuum of strong regulation and has focused on short term benefit instead of a long term sustainable strategy.

Interestingly, there has been greater stability at the level of local leadership in the Prefecture, Municipalities, Congress and Military rather than in the Galapagos National Park Service, INGALA, and the central government ministries. Ecuador has therefore found it difficult to maintain the interests of the nation in Galapagos; shorter term interests and private sector interests have dominated the socioeconomic scene. The government must play a leadership role in reconstructing a strategic vision for the future of Galapagos and assume responsibility for ensuring its implementation.

Subsidies and incentives in Galapagos

There are a series of cost-reducing incentives that have been historically applied in Galapagos. These subsidies and incentives include fiscal policies and regulations that tend to generate individual benefits or benefits for companies, instead of collective benefits (Kerr, 2004; Taylor, 2002). The clearly identifiable subsidies include air travel, energy and fuel, and public institutions. There are also price distortions in the form of inadequate tax regulation of tourism and fishing activities. These incentives and subsidies result in economic inefficiencies and in some cases hide externalities[4] or distort markets. Indeed, some of the fuel subsidies apply to foreign companies working in Galapagos.

Subsidies were initially applied to ensure a minimal standard of living of a relatively small population to compensate for the restrictions that are associated with living in an isolated location. Costs of public services are higher in remote areas because transport costs are higher and because it is difficult to establish economies of scale. Continuing to promote and apply subsidies converts Galapagos into a more attractive location for immigration and means that the cost of living is lower in comparison to the real cost of the services. Incentives also generate social and ecological effects that can be positive or negative. There are not many studies that estimate the levels of subsidies and a complete study of the impacts of fiscal policies are crucial if more effective fiscal policies are to be established. Kerr, Cárdenas et al. (2004) estimate that in 2000 the full value of the subsidies was US$14.4M, including estimates of flight allowances, transportation of fuel, electricity and public finances. Jácome (2007) estimates an annual subsidy of US$4.83M in 2000 to the electrical supply and US$13M to fossil fuel use.

[4] Externalities are understood as a negative consequences of actions or individual decisions on collective benefits over the long term

Conclusion

Many factors have contributed to the present-day situation in Galapagos. However, a central factor has been the impact of the political national instability on leadership in Galapagos, principally in institutions such as INGALA, the Galapagos National Park Service and the Quarantine Inspection System for Galapagos (SICGAL). Leadership instability associated with a local leadership focused on short term growth has resulted in a focus on increasing tourism and unregulated economic development.

The recent declaration of the President of Ecuador probably offers the local, national and international communities the last opportunity to implement a strategic change in direction in Galapagos. The President has taken the first step in any process of social change: recognizing the need to change and make Galapagos a national conservation priority. This action has been supported by the listing of the Galapagos on the UNESCO List of World Heritage in Danger.

The next crucial step is to define clearly the necessary leadership coalition that will implement the changes required in Galapagos. Acting on the basis of the available information the leadership coalition must construct a vision for the future: a task that has in part been accomplished in the Regional Plan and the Special Law for Galapagos. The vision must be communicated effectively and the leadership coalition must focus on implementation and ensuring that an institutional framework exists with clear roles and responsibilities.

Galapagos is a microcosm of the social, political, economic and ecological changes occurring in the world. Human population is increasing and resource demands are shifting as are ecological changes in the resource base frequently driven by globalization and liberalization of markets. At the same time decision making is occurring in an increasingly complex social and cultural environment. Institutions also need to change to survive under these new conditions, including building their capacities for facilitating social interactions so as to better understand stakeholder needs and perceptions.

Islands have always been useful to examine social and ecological changes and have often served as models for these changes. These landforms react more rapidly than continental areas and so arguably the changes occurring in Galapagos reflect the future of many other areas. It is also arguable that resolving these issues in Galapagos could provide a critical and important model for the rest of the world. Conversely, if we can not achieve a sustainable society and conservation in Galapagos, is it is possible to do so anywhere else in the world?

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